

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (Previously Presented): A profile producing method of producing a profile defining an association between a first color data representative of coordinates on a predetermined first color space and a second color data representative of coordinates on a second color space independent of output devices, for colors appearing on a color image outputted from an output device for outputting the color image in accordance with image data including the first color data, said profile producing method comprising:

a color association definition obtaining step of obtaining a color association definition, in which distribution of coordinate points is relatively rough, defining an association between the first color data representative of coordinates on the first color space and the second color data representative of coordinates on the second color space;

a profile selection step of selecting a first profile from among a plurality of profiles, in which distribution of coordinate points is relatively close as compared with the color association definition obtained in said color association definition obtaining step, defining an association between the first color data representative of coordinates on the first color space and the second color data representative of coordinates on the second color space; and

a profile producing step of producing a second profile defining an association between the first color data representative of coordinates on the first color space and the second color data representative of coordinates on the second color space, by correcting the first profile selected in

said profile selection step in accordance with the color association definition obtained in said color association definition obtaining step,

wherein said color association definition obtaining step causes said output device to output a color chart composed of a plurality of color patches associated with coordinate points more roughly distributed as compared with a distribution of the coordinate points defined in association by said first profile, on the first color space, and measures the plurality of color patches constituting the color chart outputted from said output device to determine each of the second color data representative of each of the coordinates on the second color space, on each color patch, so that a color association definition, defining an association between the first color data representative of the coordinates on the first color space, wherein a distribution of coordinate points is more rough as compared with the first profile, and the second color data representative of coordinates on the second color space, is determined.

2. (canceled).

3. (Currently Amended): A profile producing method of producing a profile defining an association between a first color data representative of coordinates on a predetermined first color space and a second color data representative of coordinates on a second color space independent of output devices, for colors appearing on a color image outputted from an output device for outputting the color image in accordance with image data including the first color data, said profile producing method comprising:

a color association definition obtaining step of obtaining a color association definition, in which distribution of coordinate points is relatively rough, defining an association between the first color data representative of coordinates on the first color space and the second color data representative of coordinates on the second color space;

a profile selection step of selecting a first profile from among a plurality of profiles, in which distribution of coordinate points is relatively close as compared with the color association definition obtained in said color association definition obtaining step, defining an association between the first color data representative of coordinates on the first color space and the second color data representative of coordinates on the second color space; and

a profile producing step of producing a second profile defining an association between the first color data representative of coordinates on the first color space and the second color data representative of coordinates on the second color space, by correcting the first profile selected in said profile selection step in accordance with the color association definition obtained in said color association definition obtaining step,

~~A profile producing method according to claim 1,~~ wherein said profile selection step determines on each of the plurality of profiles a first evaluation value for evaluating a difference between a dot gain quantity of the color association definition obtained in said color association definition obtaining step and a dot gain quantity of one of the plurality of profiles, and selects one of the plurality of profiles, which is smaller in an evaluated difference, as the first profile in accordance with the first evaluation value.

4. (Currently Amended): A profile producing method of producing a profile defining an association between a first color data representative of coordinates on a predetermined first color space and a second color data representative of coordinates on a second color space independent of output devices, for colors appearing on a color image outputted from an output device for outputting the color image in accordance with image data including the first color data, said profile producing method comprising:

a color association definition obtaining step of obtaining a color association definition, in which distribution of coordinate points is relatively rough, defining an association between the first color data representative of coordinates on the first color space and the second color data representative of coordinates on the second color space;

a profile selection step of selecting a first profile from among a plurality of profiles, in which distribution of coordinate points is relatively close as compared with the color association definition obtained in said color association definition obtaining step, defining an association between the first color data representative of coordinates on the first color space and the second color data representative of coordinates on the second color space; and

a profile producing step of producing a second profile defining an association between the first color data representative of coordinates on the first color space and the second color data representative of coordinates on the second color space, by correcting the first profile selected in said profile selection step in accordance with the color association definition obtained in said color association definition obtaining step,

~~A profile producing method according to claim 1,~~ wherein said profile selection step determines on each of the plurality of profiles an evaluation value for evaluating a distance

between coordinate points on the second color space, which are associated with identical coordinates on the first color space in accordance with the color association definition obtained in said color association definition obtaining step and one of the plurality of profiles, and selects one of the plurality of profiles, which is smaller in an evaluated distance, as the first profile in accordance with the evaluation value.

5. (Currently Amended): A profile producing method of producing a profile defining an association between a first color data representative of coordinates on a predetermined first color space and a second color data representative of coordinates on a second color space independent of output devices, for colors appearing on a color image outputted from an output device for outputting the color image in accordance with image data including the first color data, said profile producing method comprising:

a color association definition obtaining step of obtaining a color association definition, in which distribution of coordinate points is relatively rough, defining an association between the first color data representative of coordinates on the first color space and the second color data representative of coordinates on the second color space;

a profile selection step of selecting a first profile from among a plurality of profiles, in which distribution of coordinate points is relatively close as compared with the color association definition obtained in said color association definition obtaining step, defining an association between the first color data representative of coordinates on the first color space and the second color data representative of coordinates on the second color space; and

a profile producing step of producing a second profile defining an association between the first color data representative of coordinates on the first color space and the second color data representative of coordinates on the second color space, by correcting the first profile selected in said profile selection step in accordance with the color association definition obtained in said color association definition obtaining step,

~~A profile producing method according to claim 1,~~ wherein said profile selection step determines on each of the plurality of profiles a first evaluation value for evaluating a difference between a dot gain quantity of the color association definition obtained in said color association definition obtaining step and a dot gain quantity of one of the plurality of profiles, and further, said profile selection step determines on each of the plurality of profiles a second evaluation value for evaluating a distance between coordinate points on the second color space, which are associated with identical coordinates on the first color space in accordance with the color association definition obtained in said color association definition obtaining step and one of the plurality of profiles, and selects one of the plurality of profiles, which is smaller in an evaluated difference and an evaluated distance, as the first profile in accordance with both the first evaluation value and the second evaluation value.

6. (original): A profile producing method of producing a profile defining an association between a first color data representative of coordinates on a predetermined first color space and a second color data representative of coordinates on a second color space independent of output devices, for colors appearing on a color image outputted from an output device for outputting the

color image in accordance with image data including the first color data, said profile producing method comprising:

a profile obtaining step of obtaining a first profile defining an association between the first color data representative of coordinates on the first color space and the second color data representative of coordinates on the second color space;

a color association definition obtaining step of causing said output device to output a color chart including a plurality of color patches associated with coordinate points more roughly distributed as compared with a distribution of the coordinate points defined in association by said first profile, on the first color space, and measuring, of the plurality of color patches constituting the color chart outputted from said output device, the plurality of color patches associated with coordinate points more roughly distributed as compared with a distribution of the coordinate points defined in association by said first profile, to determine each of the second color data representative of each of the coordinates on the second color space, on each color patch, so that a color association definition, defining an association between the first color data representative of the coordinates on the first color space, wherein a distribution of coordinate points is more rough as compared with the first profile, and the second color data representative of coordinates on the second color space, is determined;

a curve arithmetic operating step of performing on each combination of each of a plurality of color axes of the first color space and each of a plurality of color axes of the second color space an arithmetic operation for determining a curve formed through coupling relatively small number of points extracted from the color association definition, which are plotted on a plane represented by a color axis of the first color space and a color axis of the second color

space, while reflecting a non-linearity of a curve consisting of a relatively large number of points extracted from the first profile, which are plotted on the plane; and

a profile producing step of producing a second profile defining an association between the first color data representative of coordinates on the first color space and the second color data representative of coordinates on the second color space in accordance with an assembly of curves formed through coupling points extracted from the color association definition obtained in said color association definition obtaining step.

7. (original): A profile producing method according to claim 6, wherein said curve arithmetic operating step modifies on said each combination the curve consisting of a relatively large number of points extracted from the first profile in such a manner that relatively small number of points extracted from the color association definition are coupled with one another in accordance with a ratio of the second color data extracted from the color association definition, which corresponds to an identical first color data, and the second color data extracted from the first profile, so that an arithmetic operation for determining a curve formed through coupling relatively small number of points to one another is executed.

8. (original): A profile producing method according to claim 7, wherein said curve arithmetic operating step performs on said each combination a linear interpolation for the ratios associated with a plurality of first color data to determine each ratio associated with each value of the first color data, so that an arithmetic operation for moving points constituting a curve

consisting of relatively large number of points extracted from the first profile is executed in accordance with the ratio.

9. (original): A profile producing method according to claim 6, wherein said profile obtaining step determines the first profile by correcting an existing third profile defining an association between the first color data representative of coordinates on the first color space and the second color data representative of coordinates on the second color space in such a manner that a dot gain on each color axis of the first color space is coincident with a dot gain on each color axis determined in accordance with the color chart outputted from said output device.

10. (original): A profile producing method according to claim 6, wherein said first color space is defined by color axes of four colors of cyan C, magenta M, yellow Y and black K, and said color association definition obtaining step adopts, as said color chart, a color chart composed of color patches corresponding to coordinate points not less than three points, which are designated on each axis coupling vertexes with one another of a cubic area capable of representing a color by said output device, of each sub-space where the first color space is divided into a plurality of sub-spaces defined by color axes of three colors of C, M, Y, which are associated with a plurality of discrete coordinate points on a color axis of K color, respectively, and causes said output device to output said color chart.

11. (currently amended): A profile producing apparatus for producing a profile defining an association between a first color data representative of coordinates on a predetermined first

color space and a second color data representative of coordinates on a second color space independent of output devices, for colors appearing on a color image outputted from an output device for outputting the color image in accordance with image data including the first color data, said profile producing apparatus comprising:

a color association definition obtaining section for obtaining a color association definition, in which distribution of coordinate points is relatively rough, defining an association between the first color data representative of coordinates on the first color space and the second color data representative of coordinates on the second color space;

a profile selection section for selecting a first profile from among a plurality of profiles, in which distribution of coordinate points is relatively close as compared with the color association definition obtained in said color association definition obtaining section, defining an association between the first color data representative of coordinates on the first color space and the second color data representative of coordinates on the second color space; and

a profile producing section for producing a second profile defining an association between the first color data representative of coordinates on the first color space and the second color data representative of coordinates on the second color space, by correcting the first profile selected in said profile selection in accordance with the color association definition obtained in said color association definition obtaining section,

wherein said color association definition obtaining ~~step~~section causes said output device to output a color chart composed of a plurality of color patches associated with coordinate points more roughly distributed as compared with a distribution of the coordinate points defined in association by said first profile, on the first color space, and measures the plurality of color

patches constituting the color chart outputted from said output device to determine each of the second color data representative of each of the coordinates on the second color space, on each color patch, so that a color association definition, defining an association between the first color data representative of the coordinates on the first color space, wherein a distribution of coordinate points is more rough as compared with the first profile, and the second color data representative of coordinates on the second color space, is determined.

12. (Currently Amended): A profile producing apparatus for producing a profile defining an association between a first color data representative of coordinates on a predetermined first color space and a second color data representative of coordinates on a second color space independent of output devices, for colors appearing on a color image outputted from an output device for outputting the color image in accordance with image data including the first color data, said profile producing apparatus comprising:

a color association definition obtaining section for obtaining a color association definition, in which distribution of coordinate points is relatively rough, defining an association between the first color data representative of coordinates on the first color space and the second color data representative of coordinates on the second color space;

a profile selection section for selecting a first profile from among a plurality of profiles, in which distribution of coordinate points is relatively close as compared with the color association definition obtained in said color association definition obtaining section, defining an association between the first color data representative of coordinates on the first color space and the second color data representative of coordinates on the second color space; and

a profile producing section for producing a second profile defining an association between the first color data representative of coordinates on the first color space and the second color data representative of coordinates on the second color space, by correcting the first profile selected in said profile selection in accordance with the color association definition obtained in said color association definition obtaining section,

~~A profile producing apparatus according to claim 11,~~ wherein said profile selection section determines on each of the plurality of profiles a first evaluation value for evaluating a difference between a dot gain quantity of the color association definition obtained in said color association definition obtaining section and a dot gain quantity of one of the plurality of profiles, and selects one of the plurality of profiles, which is smaller in an evaluated difference, as the first profile in accordance with the first evaluation value.

13. (Currently Amended): A profile producing apparatus for producing a profile defining an association between a first color data representative of coordinates on a predetermined first color space and a second color data representative of coordinates on a second color space independent of output devices, for colors appearing on a color image outputted from an output device for outputting the color image in accordance with image data including the first color data, said profile producing apparatus comprising:

a color association definition obtaining section for obtaining a color association definition, in which distribution of coordinate points is relatively rough, defining an association between the first color data representative of coordinates on the first color space and the second color data representative of coordinates on the second color space;

a profile selection section for selecting a first profile from among a plurality of profiles, in which distribution of coordinate points is relatively close as compared with the color association definition obtained in said color association definition obtaining section, defining an association between the first color data representative of coordinates on the first color space and the second color data representative of coordinates on the second color space; and

a profile producing section for producing a second profile defining an association between the first color data representative of coordinates on the first color space and the second color data representative of coordinates on the second color space, by correcting the first profile selected in said profile selection in accordance with the color association definition obtained in said color association definition obtaining section,

~~A profile producing apparatus according to claim 11,~~ wherein said profile selection section determines on each of the plurality of profiles an evaluation value for evaluating a distance between coordinate points on the second color space, which are associated with identical coordinates on the first color space in accordance with the color association definition obtained in said color association definition obtaining section and one of the plurality of profiles, and selects one of the plurality of profiles, which is smaller in an evaluated distance, as the first profile in accordance with the evaluation value.

14. (Currently Amended): A profile producing apparatus for producing a profile defining an association between a first color data representative of coordinates on a predetermined first color space and a second color data representative of coordinates on a second color space independent of output devices, for colors appearing on a color image outputted from

an output device for outputting the color image in accordance with image data including the first color data, said profile producing apparatus comprising:

a color association definition obtaining section for obtaining a color association definition, in which distribution of coordinate points is relatively rough, defining an association between the first color data representative of coordinates on the first color space and the second color data representative of coordinates on the second color space;

a profile selection section for selecting a first profile from among a plurality of profiles, in which distribution of coordinate points is relatively close as compared with the color association definition obtained in said color association definition obtaining section, defining an association between the first color data representative of coordinates on the first color space and the second color data representative of coordinates on the second color space; and

a profile producing section for producing a second profile defining an association between the first color data representative of coordinates on the first color space and the second color data representative of coordinates on the second color space, by correcting the first profile selected in said profile selection in accordance with the color association definition obtained in said color association definition obtaining section,

~~A profile producing apparatus according to claim 11,~~ wherein said profile selection section determines on each of the plurality of profiles a first evaluation value for evaluating a difference between a dot gain quantity of the color association definition obtained in said color association definition obtaining section and a dot gain quantity of one of the plurality of profiles, and further, said profile selection section determines on each of the plurality of profiles a second evaluation value for evaluating a distance between coordinate points on the second color space,

which are associated with identical coordinates on the first color space in accordance with the color association definition obtained in said color association definition obtaining section and one of the plurality of profiles, and selects one of the plurality of profiles, which is smaller in an evaluated difference and an evaluated distance, as the first profile in accordance with both the first evaluation value and the second evaluation value.

15. (Original): A profile producing apparatus according to claim 11, wherein said profile selection section comprises a display for displaying a color association definition obtained by said color association definition obtaining section and a graph showing a change of dot gain quantity of said plurality of profiles, and an operating section for selecting a desired profile from among said plurality of profiles as the first profile, and wherein said profile selection section selects the first profile in accordance with an operation of said operating section.

16. (previously presented): A profile producing method according to claim 1, wherein said profile selection step selects the first profile according to the color association definition.

17. (previously presented): A profile producing method according to claim 16, wherein said profile selection step determines a difference between the color association definition and each of the plurality of profiles and selects one of the plurality of profiles having a smaller difference as the first profile.

18. (previously presented): A profile producing method according to claim 6, wherein said profile obtaining step determines the first profile by correcting an existing third profile defining an association between the first color data representative of coordinates on the first color space and the second color data representative of coordinates on the second color space, in accordance with dot gain values of the first color space and dot gain values of the color chart outputted from said output device.

19. (Previously Presented): A profile producing apparatus according to claim 11, wherein said profile selection section selects the first profile according to the color association definition.

20. (previously presented): A profile producing apparatus according to claim 19, wherein said profile selection section determines a difference between the color association definition and each of the plurality of profiles and selects one of the plurality of profiles having a smaller difference as the first profile.

21. (previously presented): A profile producing method according to claim 1, wherein said predetermined first color space is defined by four colors of cyan, magenta, yellow, and black, and said second color space is defined by chromaticity values of one of RGB and CIELAB.

22. (previously presented): A profile producing method according to claim 6, wherein said predetermined first color space is defined by four colors of cyan, magenta, yellow, and black, and said second color space is defined by chromaticity values of one of RGB and CIELAB.

23. (new): A profile producing method according to claim 1, wherein the profile selection step of selecting the first profile is based on dot gain quantities of the color association definition and dot gain quantities of the plurality of the profiles.

24. (new): A profile producing method according to claim 6, wherein said profile obtaining step determines the first profile by correcting an existing third profile defining an association between the first color data representative of coordinates on the first color space and the second color data representative of coordinates on the second color space, based on dot gain values of the first color space and dot gain values of the color chart outputted from said output device.

25. (new): A profile producing apparatus according to claim 11, wherein the profile selection section selects the first profile based on dot gain quantities of the color association definition and dot gain quantities of the plurality of the profiles.